

BOTANY.—*Calamochloa*: A Mexican grass. ERNEST R. SOHNS, U. S. National Museum. (Communicated by Agnes Chase.)

The genus *Calamochloa* was described by Fournier (1877). His brief description was based on the single collection by the French mineralogist Pierre Virlet d'Aoust, no. 1461, from San Luis Potosí, Mexico, without precise locality. Other than the type specimen in the Paris Museum and a fragment and photograph brought to the U. S. National Herbarium in 1922 by Mrs. Chase, the genus remained unknown from 1877 to 1954, when I collected it at three stations in the Sierra de Guadalcázar, between Charco Blanco, Aguaje de Garcia and the Minas de San Rafael (Figs. 18, 19), on Cretaceous limestone outcrops.

The original description of the genus by Fournier (1877) was very brief, as follows [translated]:

Glumes subequal, the lower shorter; flowers 3, of which 2 are pilose around the base, the summit less so; lemma 5-lobed, lateral and intermediate lobes subulate, palea 2-toothed, panicle ovate, inflorescence 4-5 spicate.

The glumes of this genus have the same structure as several of those in the Chlorideae, notably those of the section *Heterostega* of the genus *Atheropogon*, but the location of the lemma with respect to the rachis removes the genus from the Chlorideae. The hairs of the rachis and its appearance, suggests *Calamagrostis*, among [the species of] which one would, at first view, try to place *Calamochloa filifolia*.

The short description of the genus, quoted in the second and third paragraph, was used again by Fournier (1886). In this work he described *C. filifolia* as follows [translated]:

Culms strict, sheaths striate, glabrous; ligule pilose; blades linear, glaucous, convolute; panicle ovate and terminal; glumes subequal, the upper broadly mucronate, median nerve prominent; lemma 5-lobed [as in] *Polyschistidis*, palea truncate, plicate, obscurely 2-dentate, $\frac{1}{3}$ shorter, base and margin villous.

The rather inadequate description and the fact that the species was represented only by the type specimen, consisting of the upper portions of two or three culms and their pistillate inflorescences, led to uncertainty about the genus and its tribal affiliation. Hackel (1887, 1890) put the genus in the tribe Festuceae, subtribe Pappophoreae.

Bews (1929) keys the genus in the Festuceae, lists the author and the single species in Mexico. Rozhevits (1937) included the genus in the tribe Pappophoreae along with *Scleropogon*, *Cathestecum*, *Enneapogon* and other genera. Conzatti (1946) put the genus in the tribe Chlorideae between the genera *Tripogon* and *Leptochloa*. The origin of the generic name is given in addition to the known information about the genus. Pilger (1954) placed the genus in the tribe Festuceae, subtribe Festucinae with the notation, "Doubtful genus," and in the tribe Aveneae, subtribe Aveninae with the statement: "Genus of doubtful position."

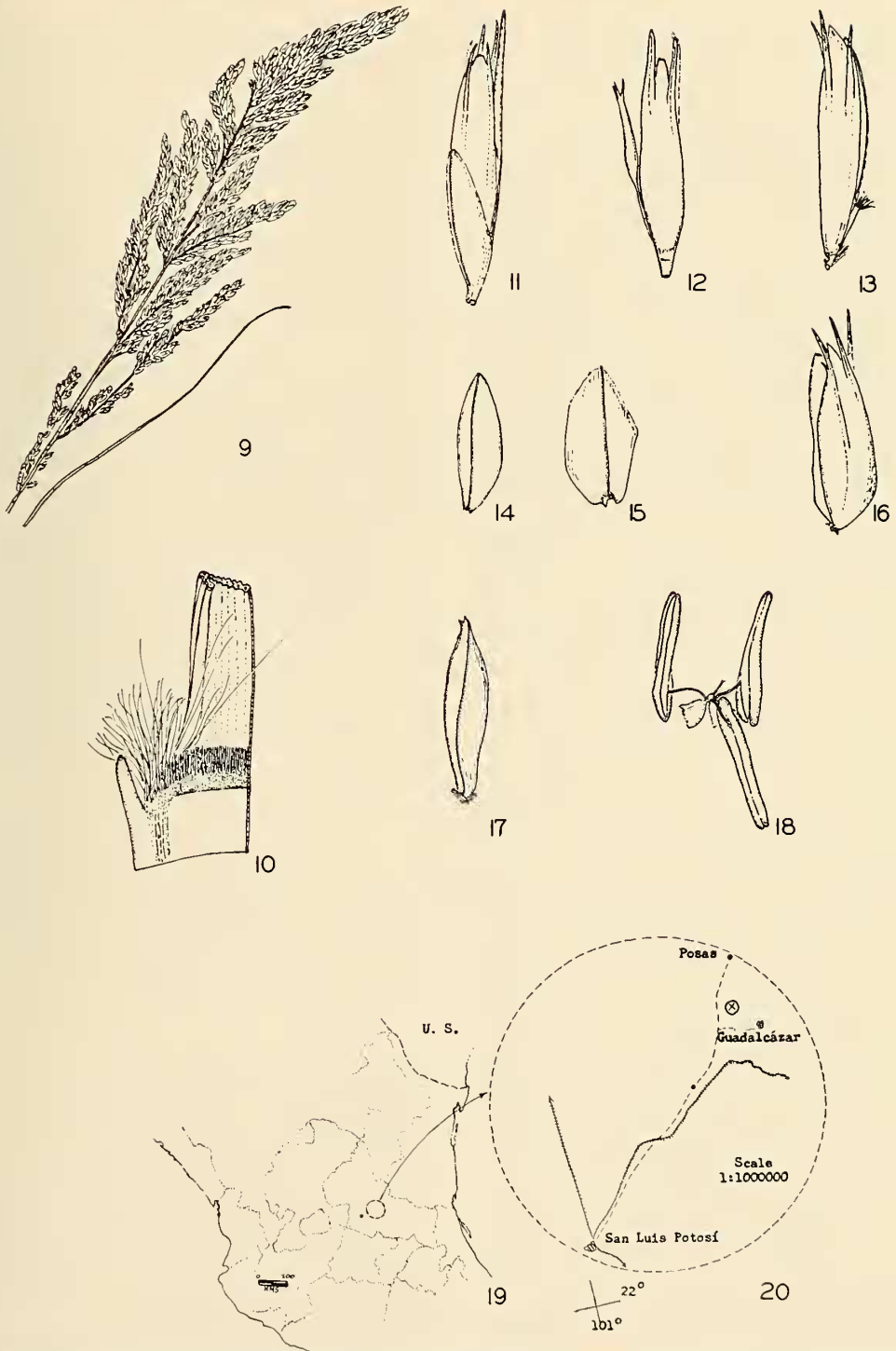
After a study of the type material and the specimens collected in the Sierra de Guadalcázar, it is concluded that the genus belongs in the tribe Pappophoreae (Rozhevits (1937) and Hubbard (1934)).

***Calamochloa* Fournier—Emended.** Plants dioecious. Staminate spikelets 3-5 flowered, the rachilla glabrous and not disarticulating between the florets; glumes about equal in length, 2.8-4.1 mm long, 3-awned, the awns short; palea as long as the lemma or slightly shorter; stamens 3, large, well-developed; pistil rudimentary; lodicules 2, membranaceous. Pistillate spikelets mostly 3-flowered; rachilla disarticulating tardily, the florets usually falling together; glumes about equal, 3.5-7 mm long, 1-nerved, glabrous except slightly scaberulous on the keel toward the tip and over the back; lemma (first floret) to 7 mm long, pilose on the margins and on each side of the median nerve from about 1 mm above the base to the base of the central awn, 3-awned, the awns prominent, subulate and diverging at maturity; callus pilose; palea as long as the lemma or very slightly shorter; pistil well-developed; stamens 3, rudimentary; lodicules 2, membranaceous. Tufted perennials forming tough clumps in dry soil, with long, flat blades which become flexuous and involute on drying. Inflorescences spreading in anthesis, later becoming narrow and compact. Name presumably from *kalamos*, cane and *chloa*, grass.

***Calamochloa filifolia* Fournier—Emended.** Staminate plants: Perennial, densely tufted, the old bases persistent, 30-100 cm tall; culms from



FIGS. 1-8.—*Calamochloa filifolia* Fournier: 1, Habit sketch of pistillate plant, $\times \frac{1}{2}$; 2, ligule, with portion of blade and sheath (median longitudinal section); 3, spikelet (from type specimen, Virlet, no. 1461); 4, lower floret (from type specimen, Virlet, no. 1461); 5, lower floret; 6, palea with rachilla joint and pistil; 7, pistil and stamens of lower floret; 8, pistil, stamens and lodicules of second floret. (Figs. 2-8, $\times 7$; all figures, except 3 and 4, drawn from Sohns, nos. 1352 and 1506.)



FIGS. 9-20.—*Calamochloa filifolia* Fournier: 9, Inflorescence of staminate plant, $\times \frac{1}{2}$; 10, ligule with portion of blade and sheath (median longitudinal section); 11, spikelet; 12, second and third florets; 13, first floret with rachilla joint; 14, first glume; 15, second glume; 16, lemma of first floret; 17, palea; 18, stamens, rudimentary pistil and lodicules of first floret; 19, outline map of northern Mexico; 20, approximate locality of *C. filifolia* (marked by an "x" in a circle). (Figs. 10-18. $\times 7$; drawn from Sohns, no. 1406; fig. 20 based on 1938 edition of a map of the State of San Luis Potosí prepared by the Dirección de Geografía Meteorología e Hidrología, Mexico.)

slightly short pubescent to densely pubescent and short appressed pilose below the nodes; blades 10–36 cm long, flat in living specimens, involute when dry, antrorsely scabrous on both surfaces; sheaths glabrous, longer than the internodes; ligule a ciliate rim, 0.7–1 mm long, pilose on the margins near the junction of the blade and sheath, auricles sometimes present as a straight upward prolongation of the margin of the sheath; inflorescence 7–20 cm long, axis and branches pubescent, branches spreading in anthesis, contracted later, short pubescent in the axils; spikelets 5 to 9 mm long, 3–5-flowered, spreading slightly at maturity; rachilla joints short pilose below the floret (base of callus and rachilla joint), otherwise glabrous; first glume 2.8–3.4 mm long, glabrous, 1-nerved, the median nerve often projecting beyond the tip 0.1–0.2 mm; second glume 2.8–4.1 mm long, otherwise as the first glume; lemma of the first floret 5–5.5 mm long, glabrous, 3-awned from below the summit, the awns 1–2 mm long and slightly exceeding the lemma, antrorsely scabrous; palea as long as the lemma or slightly shorter, with a slight membranous wing on each keel; lodicules 2, membranaceous; stamens 3, pollen grains large and well-developed; pistil rudimentary, 0.2–0.5 mm long.

Pistillate plants: Perennial, caespitose, forming hard persistent clumps, 40–100 cm tall; blades 18 to 40 cm long, flat, flexuous, becoming involute and curled when dry, antrorsely scabrous on both surfaces; culms finely pubescent and short appressed-pilose, especially at the nodes; sheaths glabrescent, longer than the internodes, sometimes with an auricle, especially on the lower sheaths; ligule a ciliate rim 0.8 to 1 mm long; hairs abundant at the margins of the ligule on the collar, up to 2.5 mm long; inflorescence 8–21 cm long, axis pubescent, branches spreading at anthesis, later appressed, pubescent and short-pilose; panicle branches short-pilose in the axils; spikelets mostly 10–12 mm long, 3-flowered, the uppermost rudimentary; rachilla joints short and glabrous; first glume 3.5–6.5 mm long, 1-nerved, scaberulous on the keel toward the tip and over the back; second glume 4.7–7 mm long, otherwise like the first glume; lemma of the first floret about 7 mm long, pilose on the margins and on each side of the median nerve from about 1 mm above the base to the base of the diverging central awn; 3-awned, the awns subulate, antrorsely scabrous and diverging at maturity; palea as long as or slightly shorter than the lemma; lodicules 2,

membranaceous; stamens 3, 0.2–0.3 mm long, apparently non-functional; pistil well-developed; stigmata plumose. Mature caryopses were not found.

The emended description is based on these specimens in the U. S. National Herbarium:

SAN LUIS POTOSÍ (staminate plants): In the Sierra de Guadalcázar between Charco Blanco and Aguaje de Garcia; alt. 1100–1600 m; September 20, 1954, *Sohns* 1340 and 1352a; September 24, 1954, *Sohns* 1460a. On the northeastern slopes of hills near Aguaje de Garcia in the Sierra de Guadalcázar; alt. 1800 m; October 1, 1954, *Sohns* 1487 and 1498. Near the Minas de San Rafael in the Sierra de Guadalcázar; alt. 1900–2100 m; October 3, 1954, *Sohns* 1506a.

SAN LUIS POTOSÍ (pistillate plants): In the Sierra de Guadalcázar between Charco Blanco and Aguaje de Garcia; alt. 1100–1600 m; September 20, 1954, *Sohns* 1352; September 24, 1954, *Sohns* 1460. On the northeastern slopes of hills near Aguaje de Garcia in the Sierra de Guadalcázar; alt. 1800 m; October 1, 1954, *Sohns* 1488. Near the Minas de San Rafael in the Sierra de Guadalcázar; alt. 1900–2100 m; October 3, 1954, *Sohns* 1506.

SUMMARY

Calamochloa filifolia Fournier, a rare genus of one species is redescribed and illustrated. The species, collected in the Sierra de Guadalcázar after a lapse of 77 years, is dioecious and apparently a highly restricted endemic. The genus belongs in the tribe Pappophoreae.

LITERATURE CITED

- BEWS, J. W. *The world's grasses*: 106, 168. London, 1929.
- CONZATTI, C. *Flora taxonica Mexicana* 1: 279, 292. 1946.
- FOURNIER, E. *Calamochloa*, nov. gen. Bull. Soc. Bot. France 24: 178. 1877.
- . *Mexicanas plantas*, pt. 2: 102. Ex Typographeo Republicae, Parisiis, 1886.
- HACKEL, E. *Gramineae* (echte Gräser). *Die natürlichen Pflanzenfamilien* 2: 62, 65. 1887.
- . *The true grasses*: 136, 156. [Translated from *Die natürlichen Pflanzenfamilien* by F. Lamson-Scribner and E. A. Southworth.] New York, 1890.
- HUBBARD, C. E. *Gramineae*, in Hutchinson, J. *The families of flowering plants* 2: 208. 1934.
- PILGER, R. *Das System der Gramineae*. Bot. Jahrb. 76: 305, 322. 1954.
- ROZHEVITS, R. YU. *Grasses*: 414, 416. Moscow, 1937.